LABORATORY CLINICAL EXPERIENCE OBJECTIVES

At the end of the hematology and hemostasis clinical (MLS 425), the student will be able to:

1. Demonstrate the proper use of a bright-field microscope. (pre-analytical)
2. Demonstrate a manual hematocrit and sedimentation rate (Westergren method) to include interpretation of results in relation to reference range. (analytical)
3. Outline the steps for performing a reticulocyte smear and Wright stain smear to include the principles of each. (analytical)
4. Using given data, calculate and interpret the reticulocyte Production index. (analytical)
5. Evaluate the quality of the reticulocyte and Wright smear stains to include sources of error and possible corrections. (pre-analytical)
6. Demonstrate a reticulocyte and Wright stain smear to include the evaluation of results to deduce the disease state. (analytical)
7. Calculate the number of cells of an unknown, within +/- 2SD of target value, after manually counting using an appropriate dilution and hemocytometer chamber. (analytical)
8. Prepare two blood smears and stain with Wright's stain. (pre-analytical)
9. Demonstrate a WBC differential count. (post-analytical)
10. Analyze the clinical significance of an LAP score to include calculations. (post-analytical)
11. Construct an osmotic fragility graph using pre-determined data, to include the interpretation of results and possible disease state. (analytical and post-analytical)
12. Explain the basic principles and identify the functional instrument parts of an automated blood cell-counting instrument to include impedance and light scatter. (post-analytical)
13. Identify sources of error and possible corrective action when using an automated blood cell- counting instrument. (pre-analytical)
14. Analyze unknown samples and evaluate results for reporting from an automated blood cell- counting instrument, to include quality control target values. (analytical)
15. Evaluate the scatterplot results from an automated blood cell-counting instrument and compare the Wright stain differential accompanying the results to conclude the possible diagnosis. (post- analytical)
16. Categorize normal WBCs on a Wright stained smear within 15% of target values. (analytical)
17. Categorize abnormal WBCs on a Wright stained smear within 15% of target values. (analytical)
18. Evaluate a WBC differential for possible disease state, to include RBC morphology and platelet estimate. (post-analytical)
19. Demonstrate a sickle cell solubility screen and discriminate between the specimens that may require extended testing. (analytical)
20. Explain the principle of the sickle cell solubility screen and correlate the results to follow-up tests required for confirmation. (post-analytical)
21. Correlate RBC indices to a stained blood film and determine what the cell picture indicates. (analytical)
22. Calculate the red cell indices manually, using given data for red cell count, hemoglobin and hematocrit, to include MCV, MCH and MCHC. (analytical)
23. Restate the "rule of three" and explain how each calculation is determined. (analytical)
24. Compare and contrast electrophoretic techniques for hematologic diagnosis to include sickle cell anemia and multiple myeloma. (post-analytical)
25. Categorize three normal WBC differentials in 30 minutes on laboratory practical, to include RBC morphology and platelet estimates. (analytical)
26. Categorize three abnormal WBC differentials in 45 minutes on laboratory practical, to include RBC morphology and platelet estimates. (analytical)
27. Communicate effectively in spoken and written English.
28. Organize tasks, under time constraints, while working independently or in a group.
29. Recognize the image of a laboratory professional in appearance and attitude and emulate it.
30. Demonstrate a PT test with an unknown and controls on the Electromechanical and Optical Density instruments. (analytical)
31. Demonstrate how to perform a manual tilt PT test. (analytical)
32. Demonstrate how to perform a PT, APTT and Fibrinogen test on coagulation analyzer. (analytical)
33. Demonstrate how to perform QC & Maintenance on the coagulation analyzer. (pre-analytical)
34. Calculate an INR using assigned instrument/reagent ISI. (pre-analytical)
35. Demonstrate an APTT test with an unknown and controls on the Optical Density instrument. (analytical)
36. Diagram a fibrinogen curve using data provided. (analytical)
37. Calculate the value of an unknown from a fibrinogen curve. (analytical)
38. Evaluate the results of an unknown as compared to target values. (post-analytical)
39. Assess the results of a D-dimer assay and FDP assay by serological methods and correlate results to disease states. (post-analytical)

Student name: _____

Students should work together with their respective mentors to complete the listed objectives. Accuracy, precision, timely reporting of test results, and demeanor must comply with the laboratory's acceptable standards. While working in the laboratory, the student must meet laboratory standards for work habit skills in patient confidentiality, communication skills, laboratory safety, universal precautions, waste disposal, and equipment/work area maintenance. It is requested that the student's laboratory competency evaluation be completed by the clinical mentor in the presence of the student to allow verbal feedback to the student regarding the student's progress and performance.

Note: As part of the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accreditation regulations, no student may engage in service work during his/her clinical experience. All laboratory test results generated by students during their clinical hours must be directly supervised by clinical laboratory staff. While the student is performing their clinical hours, they must be performing duties as a student, and not an employee. Definition of Service Work: Providing or generating results of clinical tests on patient samples without direct supervision of clinical staff or supervisor managers which exceeds the expected component required for the educational process.

Course Instructor: _____

Clinical Preceptor(s):_____

Clinical Site(s):_____

SCORING KEY

1: Discussed: Process was discussed, principle explained, student acknowledges an understanding of the process or principle.

2: Demonstrated: Process has been performed and demonstrated by the practicum instructor. Student has observed demonstration and has been allowed to ask questions as needed. The student acknowledges an understanding of the process or principle by verbally explaining the process or principle back to the practicum instructor.

3: Maximum Supervision: The student has performed the process under the direct, maximum supervision of the practicum instructor, and with the level of competency required by the laboratory for that task or process.

4: Minimum Supervision: The student can perform the process satisfactorily with only minimum or non-direct supervision by the practicum instructor, and the performance meets the level of competency required by the laboratory for that task or process.

N/A: Not Available: The nature of the laboratory does not allow the student access to the equipment/test method.

Note: The competencies will be graded for a total of 128 pts. Points will be deducted for competency categories that are not met. If an item is not available at the lab, please N/A that area so the student does not lose points. If something is not available, but was discussed with the student, please write, “1 – N/A”. Students must achieve a minimum of 80% on their competency checklist to pass.

Student name: _____

Please have all mentors sign and date below.

Mentor Signature _____ **Date** _____

Mentor Signature _____ **Date** _____

Mentor Signature _____ **Date** _____

Mentor Signature _____ **Date** _____

Comments:

Quality Control	**Expected Score**	**Student Score**	**Date complete**	**Mentor initial**
Compare QC results to control ranges & only accepts those within accepted range	4			
Analyze discrepancies for results that are not within the control range	4			
Compare duplicate test results to determine precision limits & only accepts those within the limits	4			
Analyze discrepancies for results that are not within precision limits	4			
Patient Test Results Accurately & efficiently perform routine lab testing:				
Complete 10 procedures in each category including: CBC, Hct & manual differentials of both normal & abnormal patients	4			
Complete 8 procedures in each category including: PT, APTT, FDP & D-Dimer	4			
Complete 6 procedures in the following categories: Manual cell counts & body fluid analysis	4			
Practice any other procedure the lab mentor requests (i.e. Flow cytometry & cancer markers, Hgb electrophoresis, sickle cell osmol test, specialized stains, bone marrow smears etc. If done, please explain in comments box.)	3			
Compare patient results to normal or therapeutic ranges as appropriate	4			
Choose appropriate format for reporting patient results	4			
Recognize (and correctly report) critical patient values & delta check discrepancies	4			
Report patient results accurately and in a timely manner	4			
Correctly enter results in laboratory information system	4			
Correctly verify all patient and specimen identification data	4			

Student name: _____

Correctly identify acceptable patient specimens, to include: anti-coagulant type and ratio, proper time interval between collection and testing, and specimen character	4			
Instrumentation				
Perform instrument checks and routine maintenance	4			
Perform daily start-up procedures and daily maintenance	4			
Accurately document any instrumentation errors and corrective actions required	4			
Become familiar with the instrumentation principle of current analyzer in use	1			
Know the location of instrument documentation to resolve any discrepancies	4			
Student demonstrates honesty by:				
Maintaining strict patient confidentiality	4			
Accepting control values only when within acceptable limits	4			
Performing and documenting daily & weekly maintenance procedures, preventative maintenance, temperature checks, etc.	4			
Completing all procedures in adherence to laboratory SOPs, taking no shortcuts or unauthorized modifications of procedure	4			
Student demonstrates personal interactive skills and proper professional behavior by:				
Working with co-workers in a positive manner, promoting productive workflow.	4			
Refraining from making statements or actions that represent sexual, ethnic, racial, or homophobic harassment.	4			
Willingly and consistently using appropriate personal safety devices when handling caustic, infectious, or hazardous materials.	4			
Completing all required tasks and remaining in the work area when scheduled.	4			
Student demonstrates personal interactive skills and proper professional behavior by: (Continued)	**Expected Score**	**Student Score**	**Date complete**	**Mentor initial**
Being punctual whenever scheduled.	4			
Adhering to current dress and appearance in the laboratory setting.	4			
Cleaning the work area when leaving the laboratory, returning supplies to appropriate storage location, & disinfecting all work areas used by the student.	4			
Student demonstrates professional responsibility by:				
Correctly reporting all patient test values, as well as recognizing and correctly reporting all patient critical test values.	4			
Resolving discrepancies in specimen labeling, handling, or collection before reporting results.	4			
Hours completed by student:				
Minimum time required for this lab competency is 96 hours. Clinical Preceptors are encouraged to increase the number of hours dependent on individual student need.	96 hours			
Based on performance is this the type of person you would consider for potential employment?		Y ☐	N ☐	